

Deactivation & Decommissioning at SRS

Chris Bergren

Director, Environment Compliance & Area Completion Projects

Tony Long

Acting Manager, Area Completion Projects

DOE Office of Environmental Management Robotics Team Visit to SRS

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Area Completions



T Area
Completion



M Area
Completion



In Situ Decommissioning of the Heavy Water Components Test Reactor (HWCTR)



D & D of K-Area Cooling Tower



**K-Area Cooling Tower
Implosion**



**K-Area Cooling Tower at
Completion**

In Situ Decommissioning of P & R Production Reactors



P-Reactor (Pre-D&D)



Reactor Stack Implosion

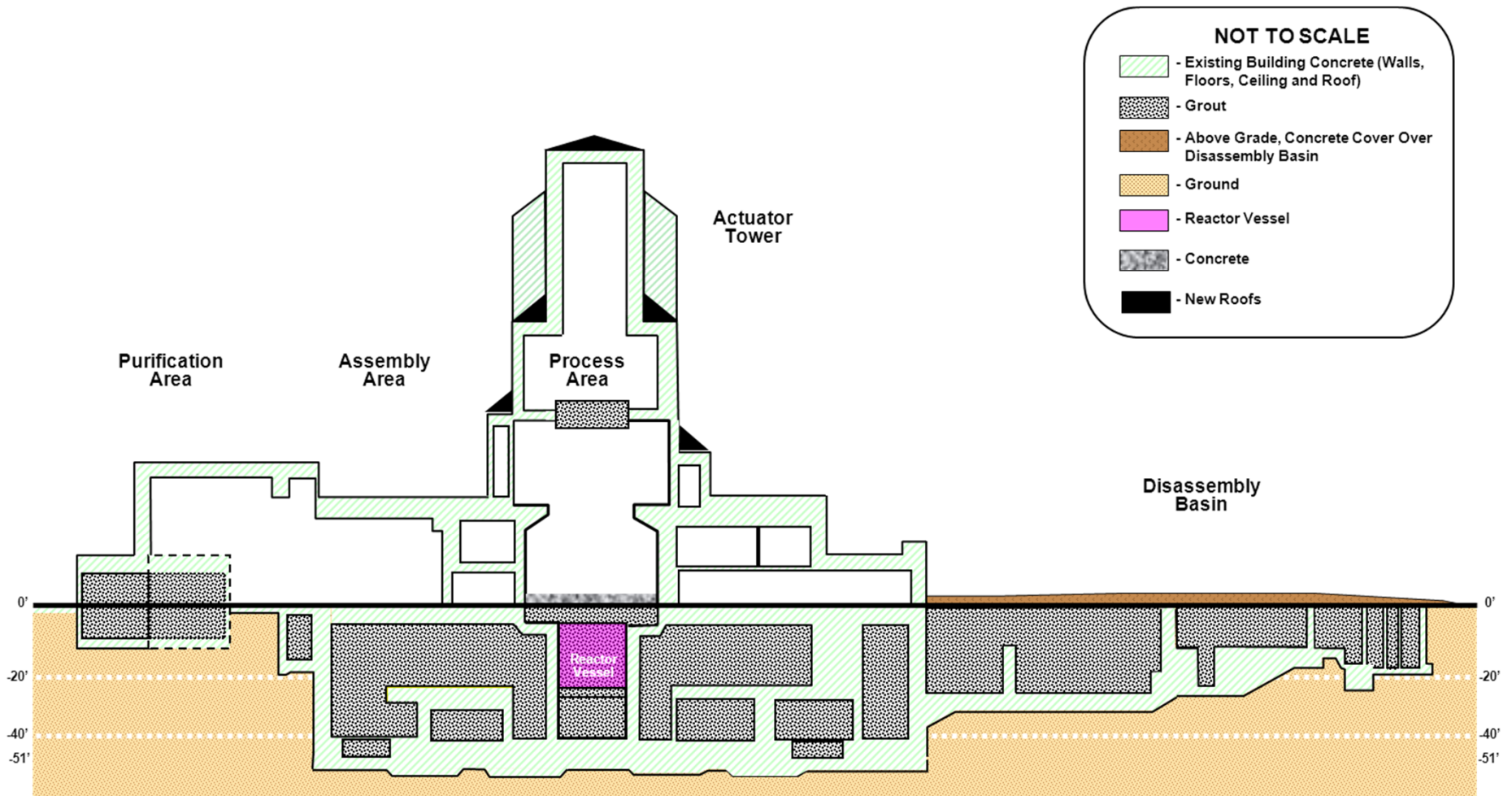


**Reactor Disassembly Basin
Demolition**



P-Reactor Upon Completion

Reactor In Situ End-State Cross-Section



What SRS Does Well...

- **Core Team Concept – EPA Region IV, South Carolina Department of Health and Environment Control (SCDHEC) and DOE-SR determine strategy**
- **Stakeholder Involvement**
- **Characterization (hands on, manpower intensive)**
- **Groundwater and air dispersion modeling**
- **Contaminate migration modeling**
- **Facility Cold and Dark (removal of all sources of hazardous energy)**
- **Deactivation (removal of transferrable contamination, chemical constituents, process “heels”, universal waste, and asbestos)**
- **Conventional Demolition (utilizing trackhoes & explosives)**
- **Open air demolition of radiologically contaminated (beta /gamma) structures**
- **Develop innovative solutions to problems (SRNL grout formulations)**

Things that Contributed to Success...

- **For facilities decommissioned to date...**
 - **Good access to allow the Core Team to understand the facility and proposed end state**
 - **Good access for people/samplers**
 - **Mostly beta/gamma or chemical constituents**
 - *Other than tritiated water, constituents not very mobile*
 - **Good access for grout installation**
 - **Ventilation only required for personnel comfort**
 - **Facilities were downgraded to Radiological or Other Industrial prior to demolition (no Haz Cat 1, 2, or 3 facilities)**
 - **Contaminated equipment “surgically” removed prior to machine demolition (only fixed contamination remained in facility)**

Future Decommissioning Challenges

- **F Canyon**
- **FB Line (integral to F Canyon Structure)**
- **235-F Plutonium Fuel Form Facility**
- **221-1F A Line (Depleted Uranium Oxide)**
- **Exhaust Fan House**
- **Sand Filter**
- **Consolidated Incinerator Facility**

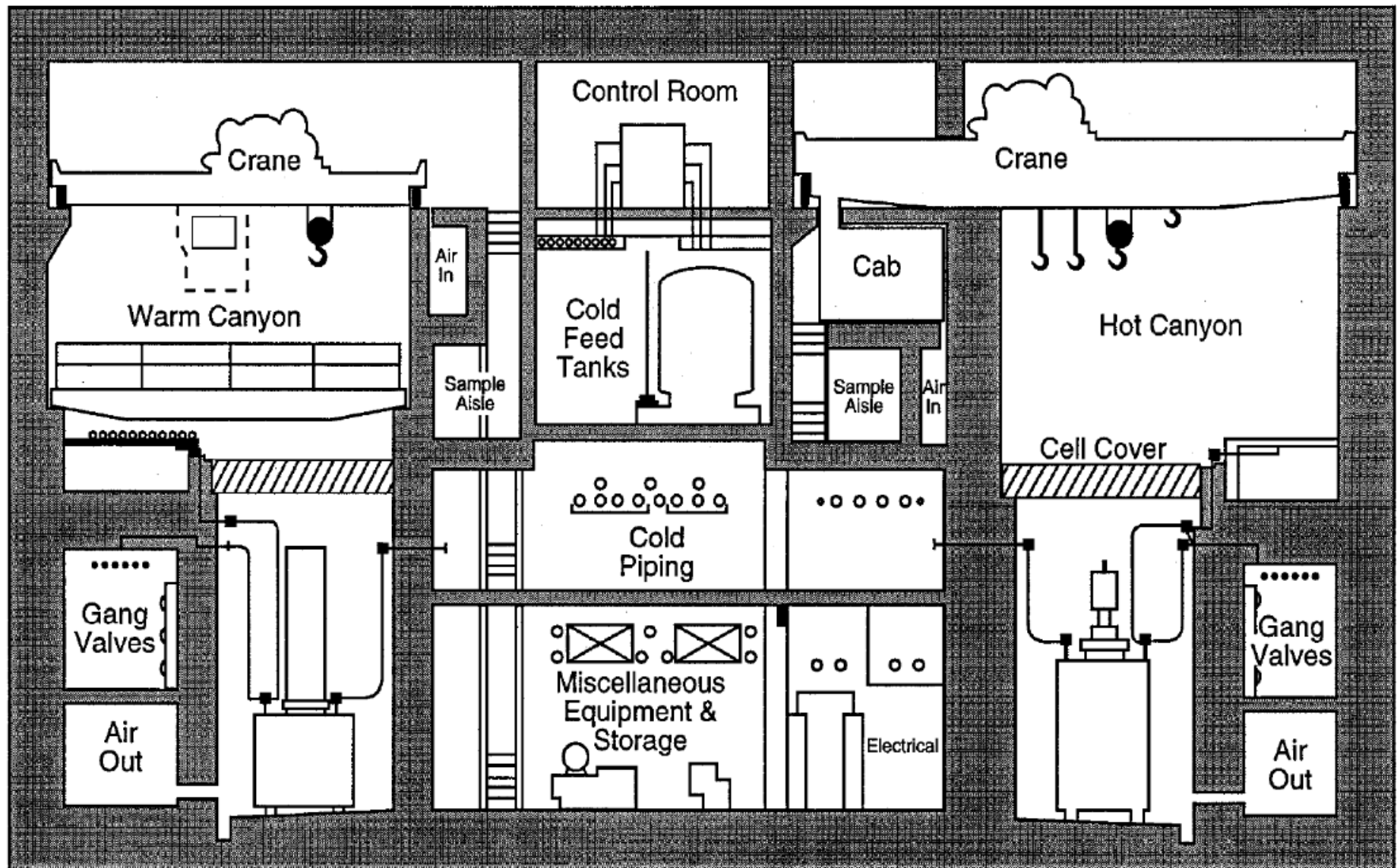
What is Different About the Future

- **Focusing on the F Canyon & FB Line Facilities:**
 - **Haz Cat 1 facilities with Authorization Bases**
 - *Significant hold up in process systems*
 - *Restrictive regulatory requirements*
 - **Significant alpha radiological contamination**
 - **Ventilation and Canyon cranes must remain operable after Cold and Dark**
 - **Very limited access for people**
 - **Remote Characterization sampling of concrete/piping/vessels**
 - **Knowledge transfer to the Core Team will be difficult**

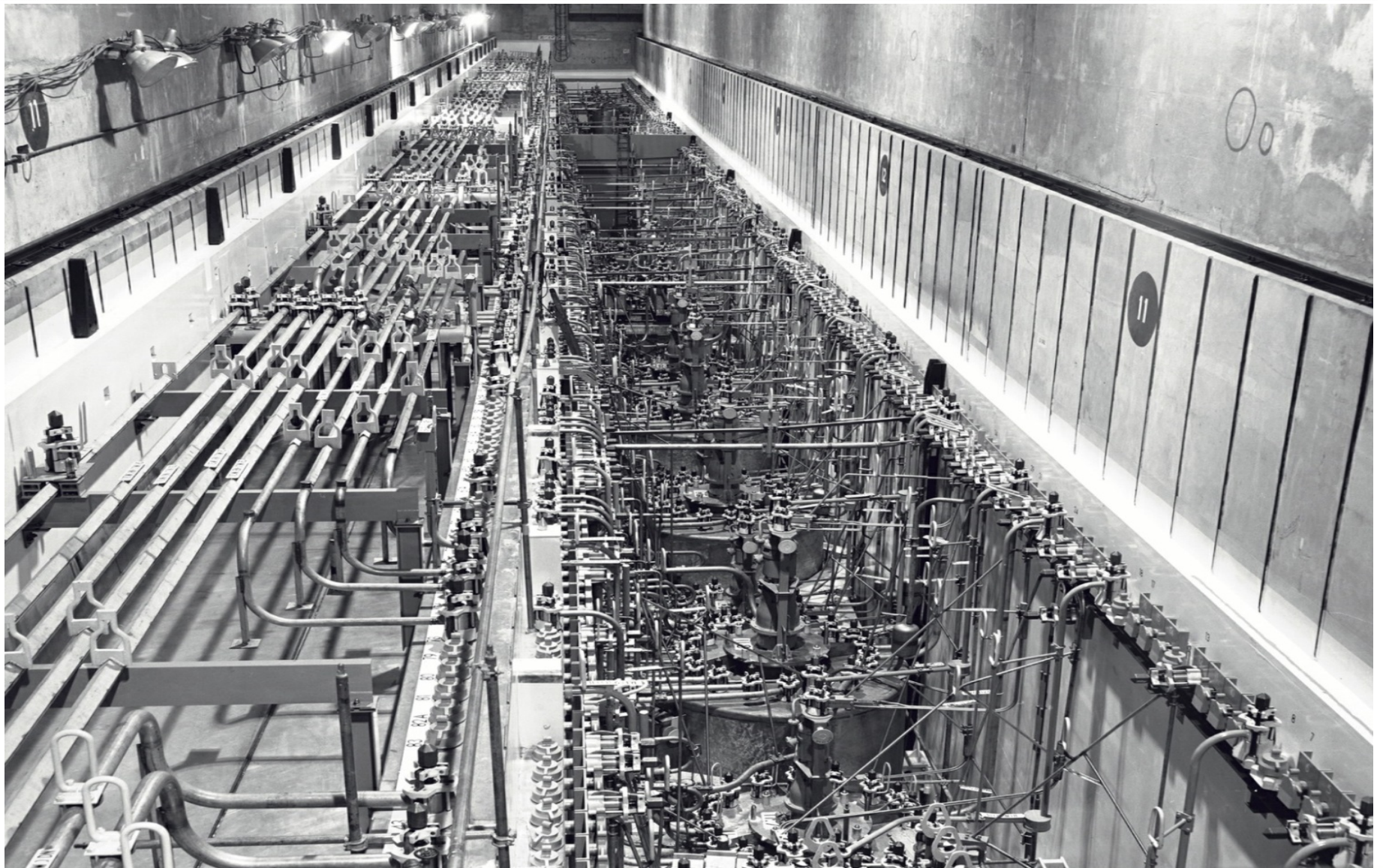
H Canyon – F Canyon Similar



Cross Section of a Canyon



A View of the Warm Canyon



What is Needed...

- **3-D, interactive video mapping of Canyon cells, pipe corridors, and FB Line rooms/gloveboxes (SRNL currently developing)**
- **Remote Radiological Dose mapping within the Canyon cells and FB Line rooms/gloveboxes**
 - Capable of quantifying radiological dose for specific equipment or floor locations in high rad background conditions
- **Remote characterization of concrete, piping and vessels**
 - Remote placement into and retrieval from tight, confined spaces via the Canyon cranes
 - Transfer of shielded samples to clean areas for transport to labs for analysis
 - Prevent cross-contamination of samples
 - Must also be capable of taking composite samples from multiple locations (concrete sampling)

What is Needed (continued)...

- Remote waste characterization of process heels, equipment, and materials for on-site or off-site disposition
 - Identify the waste disposition path BEFORE the waste is generated
- Equipment to characterize gloveboxes (process hold up/heels, source term)
- Ability to remotely remove, shield and containerize heels/source term holdup from vessels/piping in Canyon cells and FB Line rooms/gloveboxes
- Remote size reduction and packaging of FB Line gloveboxes
 - Facilitates relocation to Canyon cells for grouting
- Remote size reduction of Canyon vessels and equipment
 - Facilitates maximum utilization of space in Canyon cells for grouting
 - May also facilitate packaging for transport
- Remote draining of oils from equipment
- Remote removal of universal waste (mercury switches and light bulbs, PCB ballasts)

Comments or Questions?